ENTOMOLOGICAL NEWS

AND

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NOTES ON EUROPEAN ENTOMOLOGICAL COLLECTIONS.

By PHILIP P. CALVERT.

(See the NEWS for January, 1896, vol. vii, p. 4.)

IV.—BRUSSELS.

The governmental Musée d'Histoire Naturelle in the Parc Leopold in Brussels, opened in 1891, and famed for its skeletons of gigantic Jurassic and Cretaceous Reptilia, contains an extensive collection of Insects on the uppermost floor. The large room in which they are contained is lighted from above, and, although not separated by partitions from parts of the same floor to which the public is admitted, is open only to students and to special visitors. On an adjoining corridor are smaller rooms for study.

The specimens are contained in rabbeted, glass-topped, wooden boxes arranged as drawers, but with a considerable interval between each one and that next above. The drawer-cases are open in front except for a strip, about three inches wide, at one side by which the drawers of each case are locked in place.

The specimens are being carefully labeled, and a very considerable part of this work has already been completed. The labels employed are of two kinds (1) individual and (2) specific.

1. The *individual labels*, or those attached to the pin of each specimen, comprise (*a*) a colored locality label, (*b*) a label giving the name of the collection in which the specimen formerly was, together with the name of the specialist by whom this specimen was referred to the species in question in the course of a monographic revision, and (*c*) a label bearing a number. In those cases where the specimen has been used by several successive monographers there are several labels of the kind (*b*).

2. The white *specific labels*, attached to the bottom of the drawer below the specimens to which they refer, bear the name of the species, a number corresponding to that on label (*c*), and at the right hand end a miniature map of the world on a Mercator projection, about 20 mm. x 12 mm., on which the area of distribution is shown in red.

The policy of the Museum is to devote especial attention to the acquisition of insects of those groups of which collections do not elsewhere exist in Belgium. Thus the Odonata and the Elateridæ are not so extensively represented here for the reason that they are to be found in the collections of the eminent Belgian specialists Baron de Selys-Longchamps and Dr. E. Candeze respectively. In this way a duplication of labor is avoided.

Mons. G. Severin, Aide-Naturaliste in charge of the Insects, who very kindly conducted the writer through the building and pointed out the chief features of interest, stated that the Coleoptera, the Hymenoptera and the Hemiptera are well represented here, the other groups much less so.

The most important contents are:

COLEOPTERA.

Carabidæ.—Coll. Putzeys.

Dytiscidæ, Gyrinidæ, etc.—Coll. Chevrolat, with many types of Aubé, Sharp and Regimbart. A list of these has been published by M. Severin (Ann. Soc. Ent. Belg. xxxvi, pp. 469–478, 1892), in which he estimates the total number of species of these aquatic Coleoptera as 2129, of which the Museum possesses 1301 (299 types) in 6000 specimens, exclusive of the duplicates.

Scarabæidæ, Coprophaga, Melolonthidæ and Dynastidæ.—Coll. Thompson.

Malacodermata.—Coll. Guerin-Méneville.

Heteromera.—Coll. Thompson, very rich.

Curculionidæ.—Coll. Castelnau, including specimens from colls. Dejean, Laferté and Roelofs.

Longicornia.—Coll. Lacordaire, good but not very rich.

Chrysomelidæ.—Colls. Chapuis, Saintpierre.

HYMENOPTERA.

Ichneumonidæ, Braconidæ.—Coll. Wesmael.

———o———

LOCAL LIST.

By A. J. SNYDER, Evanston, Ill.

The lists of insects taken by collectors in various localities are always interesting to me. We desire to know where and when to look for certain species. If such lists were more common, and were studied more, much valuable time would be saved by not looking for things in wrong times and seasons. Beginners are discouraged because they think it is impossible to secure a collection of any size unless one can travel or live in the tropics, hence I have made notes of my season's captures and give the species which I have taken within the past season and within a radius of one mile from my house.

North Evanston is thirteen and a half miles from one of the main depots of Chicago. Native timber abounds—oaks ashes, elms and basswoods are predominant forest trees. In my own yard are numerous trees which are kept smeared with molasses and vinegar during the insect season.

My collecting must be done at night and on occasional Saturday afternoons when my duties as teacher will permit. From June 19th to August 8th, my vacation occurred, and I collected in Utah, Idaho and Yellowstone Park. As to this trip I hope to have something to say in the future, but I can never know how many species might have been added to my list had I been at home.

Besides the species named I have taken probably twenty kinds, mostly micros, which are yet unidentified. The *Catocalas*, usually abundant from June to October, were conspicuous by their absence this year. I have been amazed at the method of appearance and the stay of certain species.

Aletia argillacea appeared in abundance one night; a few were seen the following evening, and that was the last of the species.

Hadena arctica for a time crowded every other species away from the bait and then gave place to thousands of *Leucanias*. At the beginning and close of the season *Xylinas* were here in countless numbers; during the middle of the season not one was seen.

Amblyscirtes samoset is perhaps the rarest butterfly in this section. A little girl brought me a dandelion blossom one evening, to which a fresh specimen was clinging. Another evening, on coming in with dark lantern and bottle from collecting, another *A. samoset* was clinging to my clothing. Several more of the species were taken later on blackberry blossoms.

The dates I have given represent the first appearance of the species, or else give the time during which the species was found here. I beg to again recommend to collectors the planting of flowers which are attractive, especially to the *Noctuids*.

The *Verbenas*, *Petunias* and *Nicotiana*, have rendered me the best service. The first capture of the season was made February 21st; the last, November 14th. On this last date three species were taken: *Orthosia ferruginoides*, *Xylina unimoda* and *Peridroma saucia*.

RHOPALOCERA.

Danais archippus, June 11, common
Argynnis idalia, June 11, one
" cybele, June 10, common
" alcestis, August, rare
" bellona, May 5, common
Phyciodes nycteis, May 24, one
" tharos, May 10, common
Grapta interrogationis.
" *a* fabricii, August, common
" *b* umbrosa, August, com.
" comma, April 20, few
Vanessa antiopa, April 20, few
Pyrameis atalanta, June 12, few
" huntera, Sept. 10, com.
" cardui June 15, rare
Limenitis ursula, August, one
" disippus, May 29, several
Neonympha eurytris, June 4, abund.
Libythea bachmani, Aug., one seen
Thecla melinus, Aug. 23, two
Chrysophanus thœ, Aug. 23, two
Lycæna neglecta, May 30, abundant
" comyntas, Aug. 23, two
Pieris protodice, August, few
" rapæ, May, abundant
Meganostoma cæsonia, May and September, abundant
Colias eurytheme, August, two
" philodice, May 6, common
Terias nicippe, August, one
Papilio ajax, June 6, common
" turnus, June 2, one
" cresphontes, June 2, several
" asterias, May 3, several
" troilus, August, two
" philenor, May 30, several
Ancyloxypha numitor, Aug., sev'l
Pamphila zabulon, May 29, com.
" peckius, May 29, com.
" cernes, June, common
Amblyscirtes samoset, May 23, five
Nisoniades martialis, May 31, one
" juvenalis, May 3, two
Pholisora catullus, June 10, one
Eudamus pylades, June 7, one
" tityrus, August, one

TAKEN IN OTHER YEARS, SAME LOCALITY.

Euptoieta claudia, one
Argynnis myrina, several
" aphrodite (?)
Grapta j-album, common 1893
Junonia cœnia, two 1894
Neonympha canthus, common '94
Thecla calanus, common 1894
Thecla titus, several
Feniseca tarquinius, one 1893
Pamphila egeremet, several 1894
" manataaqua, several '94
" verna, common 1894
" metacomet, several 1894

HETEROCERA.

Hemaris thysbe, May 3, several
Amphion nessus, June 7, one
Thyreus abbotii, June 7, one
Deilephila lineata, April 29, abund.
Chœrocampa tersa, August, one
Ampelophaga chœrilus, May, sev'l
" myron, June, several
Protoparce celeus, August, scarce
" carolina, Aug., scarce
Sphinx kalmiæ, July, one.
" eremittus, August, one
Smerinthus geminatus, June 12, four
Paonias astylus, June 12, several
Alypia octomaculata, June, several
Ctenucha virginica, June, one
Euphanessa mendica, June 8, sev'l
Utetheisa bella, Sept. 21, abundant
Arctia rectilinea, June 10, one
" nais, June 12, one
" virguncula, June 12, many
Leucarctia acræa, May 24, one
Spilosoma virginica, June 12, one
" latipennis, June, one
" antigone, June 12, sev'l
Halisidota tessellata, August, one
Datana contracta, June 12, several
Nadala gibbosa, June 12, several
Lophodonta georgica, June 12, one
Platypteryx arcuata.
Attacus cecropia, June 15, two
Actias luna, July 17, one
Telea polyphemus, June, one
Hyperchiria io, June 12, three
Dryocampa rubicunda, July, one
Prionoxystus robiniæ, June 3, two
Arsilonche henrici, May 23, one
Acronycta occidentalis, May, one
" lobelia, May 30, several
" hamamelis, one
" hæsitata, June 4, several
" retardata, June 3
" oblinita, June 3, one
Microcœlia diptheroides, May 31, several
Bryophila lepidula, June 4, one
Agrotis badinoides, Sept. 3, many
" ypsilon, April to Oct. 14, many
Peridroma saucia, April 5 to Oct. 14, many
Noctua baja, August, many.
" normaniana, August, many
" bicarnea, August, many
" c-nigrum, May 22, many
" haruspica, August, few
" clandestina, June 1, several
Feltia subgothica, August, many
" jaculifera, August, many
" herelis, August, few
" venerabilis, September, few
Garneades scandens, Aug. 24, one
" messoria, Sept. 2, one
Mamestra meditata, Aug., abund.
" detracta, June 6, one
" atlantica, one
" grandis, one
" trifolii, May 24, several
" latex, June 7, one
" beanii, May 24, one
" renigera, through season common
" olivacea, Aug., abund.

Mamestra lorea, May 22, abundant
Hadena sputatrix, May to Sept., common
Hadena impulsa, June 11, one
" devastatrix, May, abund.
" arctica, June 3, common
" cariosa, June, several
" vulgaris, June 6, several
" lignicolor, June, several
" quæsita, June, one
" modica, June, common
" fractilinea, June, several
Oligia festivoides, May 30, two
" grata, June 1, one
Perigea luxa, May 30, one
" fabrefacta, 1895, one
Dipterygia scabriuscula, May, sev'l
Hyppa xylinoides, May 17, several
Laphygma frugiperda, Sep., abund.
" obscura, Sept., several
Prodenia lineatella, Sept., common
Euplexia lucipara, May 30, one
Nephelodes minians, var., May, common
" violans, Aug., common
Helotropha reniformis, Aug., sev'l
" atra, August, several
Hydrœcia immanis, Sept. 2, com.
Monodes nucicolora, Aug. 1, one
Leucania pallens, May 22, several
" albilinea, May 24, several
" phragmatidicola, May 22, common
" commoides, June, com.
" unipuncta, May 6 to Nov. 14, common
" pseudargyria, June 1, several
" var. stolata, June, one
Nolophana malana, June 6, one
Caradrina miranda, May 30, one
Pyrophila pyramidoides, Sept., one
Orthodes infirma, May 24, several
" cynica, September, one
Tæniocampa oviduca, May 30, one
" alia, April 6, common
Pyrrhia umbria, April 6, one
Orthosia ferruginoides, Sept. to Nov. 14, abundant
Glæa inulta, Sept. 20, common
Xanthia flavago, 1895, one
Cirrhoedia pampina, Sept., abund.
Scoliopteryx libatrix, May 2, one
Scopelosoma tristigmata, Sept., one
" walkeri, Feb. 28, one
" morrisoni, Feb., five
" devia, April 6, sev'l
Xylina bethunei, April 6, several
" antennata, Oct., several
" laticinerea, April and Nov., several
" unimoda, Nov., abundant
" pexata, April 11, one
Calocampa nupera, April 11, sev'l
" curvimacula, April 11, several
Cucullia asteroides, May 7, one
Ingura abrostoloides, June 3, one
Aletia argillacea, Sept. 18, abund.
Ogdoconta cinereola, June, abund.
" carneola, May 22, com.
Devia purpurigera, Aug. 13, one
Plusia biloba, June 12, several
" verruca, Sept. 20, one
" dyaus, Sept. 20, one
" precationis, common
" ou, Sept. 19, one
" pedalis, Sept. 20, one
" brassicæ, August, common
" oxygramma, Sept., one
" simplex, May, common
Plusiodonta compressipalpis, May 30, one
Heliothis armiger, May 27 to Oct., common
Acontia erastrioides, May 24, com.
Chamyris cerintha, May 27, one
Erastria apicosa, May, several
Galgula subpartita, Sept. 24, one
Drasteria erechtea, April 19, com.
" erichto (?), May 2, sev'l
Hypocala hilli, Sept. 21, one

Euclidia cuspidea, June 1, several
Grammodes smithii, May and September, two
Catocala uxor, June 12, several
" unijuga, June 12, one
" cara, June to Nov., sev'l
" nurus, June to Nov., sev'l
" communis, 1895, one
" angusi, June 7, one
Celiptera frustulum, June 3, several
Parallelia bistriaris, June, abundant
Remigia latipes, June, several
Zale horrida, May 22, several
Pheocyma lunifera, May 17, several
Homoptera edusa, May 10, several
" *a* saundersii, June, sev'l
" *b* lunata, June, several
" edusina, June, several
" *a* atritincta (?), June,
Ysia undularis, June 4, one
Pseudanthrœcia coracias, May, one
Homopyralis tactus, May 10, com.
Pseudaglossa lubricalis, Aug., com.
Epizeuxis aemula, June 7, one
" americalis, Aug., several
Herminia petrealis, Aug. 13, one
Pityolita pedipalalis, June, one
Philometra eumelusalis, June, one
Palthis angulalis, June 15, several
Heterogramma rurigena, May, one
Renia flavipunctalis, May 30, one
Hypena humuli, June 8, several
Hypena scabra, August, several
Caberodes confusaria, June, several
Endropia serrata, June 12, one
" hypocharia, June 7, com.
Thernia fervidaria, Sept. 2, several
Angerona crocataria, June 7, sev'l
Aplodes mimosaria, May 24, one
Eucrostis chloroleucaria, May, one
Ephyra myrtaria, June 6, one
Phasiane mellistrigata, June 12, one
Haematopis grataria, May 11, sev'l
Boarmia polygrammaria, Aug., one
Tephrosia canadaria, May 24, one
Phibalapteryx latirupta, Aug., com.
Biston ursarius, May 23, one
Rheumaptera unangulata, May, one
Ochyria designata, May 4, several
Eupithecia implicata, June, several
Nomophila noctuella, 1895, rare
Pyrausta octomaculata, May, sev'l
" insequalis, May 4, one
Pyralis farinalis, June, several
" olinalis, June 8, one
Crambus albellus, May 23, com.
" vulgivagellus, 1895, com.
" interminellus, 1895, com.
Platyptilia carduidactyla, June, one
Cacœcia rosaceana, June, several
Pædisca scudderiana, June 12, one
Carpocapsa pomonella, Feb., one
Stenoma schlaegeri, May 30, one

Since writing the article for the NEWS, giving list of specimens taken at Evanston, Ill., during 1895, it has become necessary to make an addition. Twice since completing the article the mercury has been to 3° below zero. A heavy snow covered the ground for several weeks, but now the weather is warm, the mercury stands at 53° to-night. The snow has disappeared, and on Christmas eve I have taken twelve moths at sugar.

The moths captured at this, so far as I know, unprecedented late date for this latitude, were as follows:

Xylina unimoda ♂ ♂ ♀, ...	3
Scopelosoma walkeri ♂, ...	1
" *morrisoni* ♂ ♂ ♂ ♂ ♂ ♀, . .	7
Peridroma saucia ♂, ...	1
Total	12

INSECT COLLECTING AT ELKHART, IND.

R. J. WEITH.

During the Summer of 1895 I had been busy collecting the insects of all orders, and thought it would be of interest to record some of the species that were new to this locality. Having promised some specimens of *Amphion nessus*, on May 29th, I went to the locality where they are usually found; stationed myself on a piece of ground where numerous elm and sugar-maple trees had been cut down a few weeks before, and very soon an *A. nessus* made its appearance, feeding in its nervous flight on the sap still oozing from the stumps. A sweep of the net and I thought an *A. nessus* was mine, but the unevenness of the ground allowed it to escape from the net, as this species, contrary to the habits of other Lepidoptera, does not fly upward, but gets out at the bottom.

Numerous specimens of Muscidæ, *Vespa*, etc., were feeding on the sap, as was also a single *Hololepta fossularis*, the only one taken here by me during twenty years' collecting. A specimen of *Galeruca externa*, an unusual species so far east, taken under loose bark on a fallen tree trunk. The capture of an apparent Hymenopterous insect flying past proved to be the rare *Gnorimus maculosus*. I have taken two each of *Calosoma frigidum* and *peregrinator* at the electric lights, and plenty of *C. scrutator* and *C. wilcoxi*, never very abundant here before.

Lachnosterna prunina was also plentiful. Water beetles were very scarce, except *Hydrophilus ovatus*, of which I could have filled a basket, but very few *H. triangularis*. *Donacia subtilis*, another new species, very plentiful.

Occasionally an *Asilus sericeus*, preying on *Pompilus* sp. on the margin of the pond, would find its way into my water-beetle net. Have taken over fifty specimens of *Neonympha canthus*, usually scarce here at other seasons, and, contrary to their usual habits, on an open marsh in the glaring sun. Also sixty-nine specimens of *Satyrus alope*, in about two hours, on a little patch of marsh bordering the lake.

Other new Lepidopterous species taken during the season were six specimens of *Argynnis idalia*, one of *Euptoieta claudia* and two of *Philampelus pandora*. Have not seen a specimen of *Calopterix maculata* in four years, previously an abundant species. All orders were fairly scarce during the season, doubtlessly on account of excessive heat and dryness.

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PHILADELPHIA, PA., APRIL, 1896.

DUST.

ONE of the greatest "bug-a-boos" to the bugologist is dust. Dust on the glass or the drawers of cabinets; dust on the boxes containing insects; dust everywhere. Wooden cabinets, unless extraordinarily well made, will admit large quantities of dust. They are apt to warp, and the cracks in the back widen and dust enters. Dust is not such a serious matter in private collections, but in large museum collections, where it is hardly possible to have some one constantly cleaning, it is a great nuisance. In handling boxes or drawers one's fingers soon become black, and often it is difficult to see through the glass of a drawer. The entomological cabinet of the future, whether for drawers or boxes, will undoubtedly be made of metal (tinned sheet iron or aluminum) with a front of the same material closing on rubber. Such a case is used by the ornithologists, and they find it a big improvement over old methods.

SILK-PRODUCING LEPIDOPTERA.—Dr. Dusuzeau, Directeur du Laboratoire d'Etudes de la Soie, Rue St. Polycarpe 7, Lyon, France, desires to obtain, either by way of exchange or purchase, specimens belonging to the groups Saturnides, Bombycides, Lasiocampides, etc., from all parts of the world; the eggs, larvæ and cocoons are also desired, together with information of the food-plant.

DEPARTMENT OF ECONOMIC ENTOMOLOGY.

Edited by Prof. JOHN B. SMITH, Sc.D., New Brunswick, N. J.

Papers for this department are solicited. They should be sent to the editor, Prof. John B. Smith, Sc.D., New Brunswick, N. J.

The Flour Moth in Mexico.—Since the discovery of the flour moth, *Ephestia kuehniella* Zell., in bran, meal and cakes in the Mexican exhibit at the World's Fair ("Insect Life," vol. vi, p. 221), we have suspected its presence in Mexico, but have had no positive information regarding it. I am now (March 5, 1896) in receipt of a package of matted flour from a flouring-mill in Saltillo, Mexico, which is literally alive with larvæ and pupæ of the flour moth. The insect has been established in the mill for over a year, and is an alarming pest. The climate is so even there is little or no difference in the attack at any time of the year. It infests all parts of the mill, but is most troublesome in spouts, elevator legs, purifiers and hoppers.—W. G. JOHNSON, Urbana, Ill.

The Hymenopterous Parasite of the Angoumois Grain Moth.—In the year 1883, Mr. F. M. Webster described a parasite of the Angoumois grain moth (*Sitotroga* (*Gelechia*) *cerealella* Ol.), giving it the name *Pteromalus gelechiæ* (12th Rept. St. Ent. Ill. p. 151). The subfamily to which this species belongs, Pteromalinæ, contains many minute forms of very similar appearance and difficult to separate. Recently parasites were reared at the Department of Agriculture from moth-infested corn from Sharpsburg, Texas, which have been compared by Mr. Ashmead with a series in the National Museum from Europe identified as *Dibrachys boucheanus* Ratz. and pronounced by him to be indistinguishable from that species. Further comparison with one of Mr. Webster's types, kindly loaned by Prof. Forbes, and with much other material bred from this moth, shows all of these parasites to belong to one and apparently the same species.

Mr. Ashmead expects soon to give the Pteromalinæ the careful study that they deserve, and it is to be hoped that he will find characters for the separation of the grain moth species from the European *boucheanus* since the former is undoubtedly a primary parasite of *Sitotroga* and has always been considered a very useful auxiliary in the reduction of its grain-destroying host, while the latter, according to Brischke, is invariably hyperparasitic, preying upon the true parasites of such pernicious species as the gypsy moth. Indeed, it was originally described from material bred from a *Microgaster* living upon that moth, and, if it has continued as active, as noted by its describer, must be placed in the category of injurious species. Ratzeburg observed (Ichn. Forstins, 1844, vol. i, p. 196) that this was the most abundant of all the parasites of the gypsy moth, and that from the clusters of *Microgaster* cocoons only about half of the *Microgasters* issued.

What appears to be the same species has been several times reared at this Department under circumstances indicating hyperparasitism, including rearings from the imported cabbage butterfly (*Pieris rapæ*), also from a number of other insects including the imported currant worm (*Nematus ventricosus*) and codling moth, upon which the species was probably also secondary in attack.—F. H. CHITTENDEN.

Peach Insects.—The peach tree, as cultivated at present, is short lived. It comes into bearing more quickly than most other fruit trees, and after bearing a few crops dies, or is taken out to be replaced in newly set orchards. For this short life there are several reasons, all of them more or less under the control of the farmer. There is frequently an absence of knowledge as to the treatment required by the tree, of the proper kind and quantity of plant-food to be furnished, and of the special factors conducive to the best and most vigorous growth in this species.

Accompanying any adverse natural conditions and intensifying them are the attacks of insects of which several species are seriously destructive. Perhaps the most important, take the country through, is the "Peach-borer," the larva of a clear-winged moth, *Sannina exitiosa*. This larva is a white, wrinkled caterpillar, with a brown head and powerful jaws or mandibles, and it works in the sap-wood and partly also in the bark of the trunk at or just below the surface of the ground. There it lies in a mass of gummy exudation and works around the larger roots and trunk, not boring much if any in the wood itself. The flow of sap is, of course, interrupted at these points, and worse than all the profuse "bleeding" tends to seriously impair the vitality of a small tree when even a single larva is at work. On larger trees, in which several may be feeding at one time, the result is correspondingly serious; the fruit sets heavily, perhaps, but the tree is unable to hold it and we get the heavy "June drop." What remains is often enough for a good crop, provided the tree is able to carry it to perfection; but it is rarely able to do even that, and undersized, unsatisfactory fruit results. As injury increases, less fruit is properly matured and the tree becomes unprofitable and is taken out.

The parents of this borer are much less known to the farmer generally. They are on the wing from May to July, their first appearance determined by latitude and are slender, black and wasp-like in appearance. In the male both pairs of wings are transparent and narrow, only the veins being narrowly black marked. In the female, which is somewhat larger and more robust, the fore wings are bluish black, and the abdomen has a broad orange band at about its middle. Eggs are laid, soon after the moths appear, on the bark as near to the surface of the ground as possible. The larvæ hatch in about two weeks, and at once bore into the bark, and in a few days reach the sap-wood, where they continue their feeding until cold weather sets in. In the Southern States they are nearly full grown at that time and do little more feeding in Spring before they form a cocoon out of chips and silk, attached to the trunk close to the surface. In the Northern States the borer becomes little more than two-thirds grown in

Fall and feeds in Spring until well along in June before forming a cocoon. The development is not by any means regular, and often some specimens of a brood live over until much later in the season so that larvæ of two separate generations may occur in a tree at one time.

The usual remedy is "worming," *i. e.*, cutting out the larvæ in Spring and Fall, and if carefully and thoroughly done it checks injury to a great extent. But an objection is that it is almost impossible to get all the larvæ and enough adults mature to continue the infestation each year. Another is that a careless man may do more harm with his knife than the borer would have done, and in all ways it is much better to attempt to keep the borers out altogether. It may be stated that killing the borers, once in the tree, is practically impossible. No mixture that can be applied so as to come into direct contact with and kill them in their burrows can be safely used on the trees. Our best plan is by mechanical means to keep the borers out altogether, and there are several ways of doing this. It must be remembered that the parent moth cannot dig underground, has no mouth parts for gnawing into the bark, and no ovipositor for piercing it. Hence she must lay her egg on the bark above the surface and glew it fast there. If we prevent this our trees are safe. The simplest of all measures is to wrap the base of the tree with newspapers to a height of from 18 inches to 2 feet. Use at least three or four thicknesses of paper, be sure that it is tied tightly and hill up against it so as to cover at least two inches. The moths will not voluntarily lay eggs on this paper, and if they do the young larvæ will not recognize it as food, and will make no attempt to eat through it. This application should be made in May and kept on through July; and usually the paper will last that time. It should be removed in August, and it may then happen that some borers will be found at the upper edge of the part covered by the paper; but if so they can be easily seen and cut out without injury to the tree. Tarred paper may be used instead, and is equally effective; indeed, the use of any textile fabric will answer the same purpose. Wrapping the trunks with cheap cotton material painted with tar paint will serve equally well and should cover the entire trunk. Essential in all these cases is care in putting on the material that the moth cannot reach bare bark at any point.

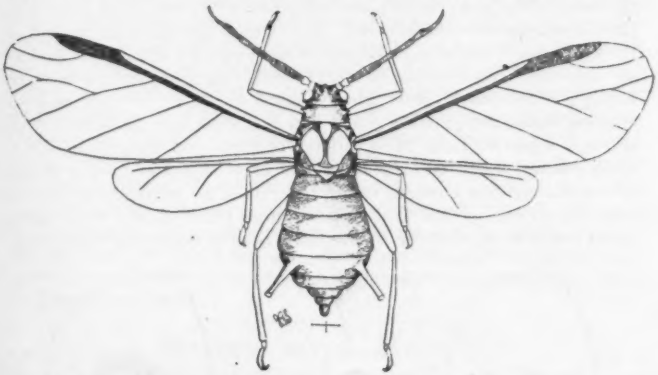
Some growers prefer to use whitewash with or without Paris green, and this is effective so long as it remains intact; but it washes off readily, and is so apt to become imperfect that it is not entirely reliable. Whale oil soap-suds with an admixture of lime and carbolic acid is also used, but is open to the same objection. White-lead paint has proved satisfactory in many hands, and has the merit of lasting well, but many who have used it claim that it injures the trees, and especially when young. One reason for that is that turpentine is used in thinning the paint. If white-lead is used at all, only the best quality should be employed, and it should be mixed with linseed oil only.

Finally, and perhaps best of all, "Raupenleim" or "Dendrolene" can

can be employed. If this is carefully applied it will last an entire season, and if applied on infested trees below the surface so as to cover the points beneath which the borers are at work, or where pupæ are formed, it may, under favorable circumstances, prevent the issuance of the adults.

Briefly re-stated, the best method of dealing with this insect is to prevent its entrance into the tree by means of a mechanical covering of any kind. The covering should be put on early in May; it must be maintained in good condition throughout July.

Next after the borer the most important insects troubling peach trees are plant lice, and in particular that species which has been described as *Aphis persicæ-niger*. This insect lives during a large portion of the year on the roots of the trees, but very often in the Spring, and sometimes in the Fall, they may also be found in considerable numbers on the branches. If they attack the branches in any numbers they usually gather near the tips on the tender shoots with the result that these curl, the leaves shrivel



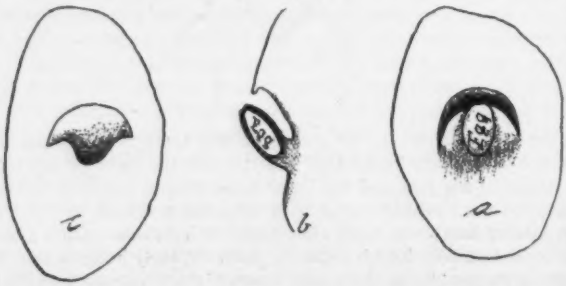
and the spur is aborted. Of course no fruit matures on a shoot of that kind nor on the twig from which it starts. On the roots the lice exhaust the vitality of the tree and the latter turns yellow, becomes feeble and eventually dies. Usually, it is then said, the tree had the "yellows." This kind of trouble is more often found in light soils and is generally more harmful where land is naturally poor. If, early in the season, black plant-lice are noticed on the young shoots of the trees, and later the trees are noticed as being weakly, an attack of root-lice may be suspected.

The remedial measures to be adopted are of two kinds. Where the insects are noticed upon the shoots, fish-oil soap, used at the rate of one pound in six gallons of water and two ounces of carbolic acid added, will usually prove satisfactory. In connection with this treatment a very heavy top dressing of kainit should be made on the surface of the soil at a time when it will wash into the ground readily. In other words, just

before or during a rain, or just after a soaking rain, when the ground is thoroughly wet. This will help to feed and nourish the tree, to stimulate it into renewed activity, and it will also destroy the root lice themselves. The application should be made at the rate of at least a thousand pounds to the acre, and a ton to the acre would be none too heavy. Instead of kainit, ground tobacco may be used with good chances of success. In this case a trench should be dug around the tree at a distance of about two feet from the trunk, and in this trench, which may be of spade width, two inches of tobacco dust may be placed. The tobacco, like the kainit, is a good fertilizer, and is rich in potash. It will become active only when thoroughly wet, and the nicotine coming into contact with the roots of the plants and the insects feeding on them will result in their death. Of the two measures the use of the kainit is to be preferred in my experience.

* * * * * *

Attacking the peach and the plum, though much the most injurious on the latter is the plum curculio, an insect so well known to all growers of fruits that it needs no description. The signs of the injury are noticed on the fruit when it becomes as large as a hazel nut or a little larger, and we get then small crescent-shaped marks numbering from one to a dozen on a single fruit—peach, plum, cherry, apple or pear. In each of these crescent marks an egg is deposited and in a short time the larva hatches and works into the fruit. Most varieties of plums and many peaches drop when infested by the curculio larvæ, but most apples and pears do not fall as the result of curculio injury, but rather the curculio can develop only in such fruit as falls to the ground from other causes. The object of the crescent mark made by the larva is to prevent injury to the egg.



If we cut out the cresent itself we notice that a little flap is loosened, and in cutting through this flap we see that the egg is laid in its middle. It can be seen readily that in this position the loosened tissue ceases growing, but it does not wither or die rapidly, hence no pressure is exerted upon the egg, which is very soft and white. The rapid growth of a vigorous apple is more than the insect can stand, and only in rare instances do larvæ develop; but if the apple falls to the ground and growth ceases

there is nothing to prevent the insect from feeding undisturbed and coming to maturity. Dealing with this insect is an unsatisfactory matter. We cannot in any way reach the larvæ by means of a poisonous spray, because it never at any time feeds exposed. When it leaves the fruit it drops to the ground, and at once bores beneath the surface, where it is again out of reach. The beetle goes into Winter quarters long before mid-Summer, and is not again seen until the Spring following, when it attacks the young leaf and flower buds. Here we have an opportunity of reaching it with a poisonous mixture,-and the most satisfactory results have been obtained with Paris green, one pound in 175 gallons of water, used when the buds are full and before they have opened. At that time the curculio feeds both on the leaf and flower buds, and there is a good chance of killing the adult before the fruit sets and before it can lay eggs. In many large plum orchards the old remedy of jarring the trees is still resorted to and works satisfactorily. It means that every morning, or at least every other day, depending upon the number of beetles, the round of the orchard must be made, and by a sudden jar on the trees the startled beetles will be induced to drop into a sheet or other receptacle spread ready to receive them. Good practice is to have all the windfalls in an orchard destroyed as fast they drop. In other words, all fallen fruit must be kept cleared up, this can best be done by pasturing hogs or sheep in the orchard. There is no danger in this practice, even if the trees are sprayed, because not enough of the poison falls to the vegetation under the trees to make it at all dangerous to stock of any kind. In feeding upon the windfalls the animals destroy the larvæ, which would otherwise develop in them. It means persistent work to lessen the number of these insects, but if there could be such a thing as cooperation among the fruit-growers and all would adopt these same measures, the injury done would be materially reduced.

Notes and News.

ENTOMOLOGICAL GLEANINGS FROM ALL QUARTERS OF THE GLOBE.

[The Conductors of ENTOMOLOGICAL NEWS solicit, and will thankfully receive items of news, likely to interest its readers, from any source. The author's name will be given in each case for the information of cataloguers and bibliographers.]

To Contributors.—All contributions will be considered and passed upon at our earliest convenience, and as far as may be, will be published according to date of reception. ENTOMOLOGICAL NEWS has reached a circulation, both in numbers and circumference, as to make it necessary to put "copy" into the hands of the printer, for each number, three weeks before date of issue. This should be remembered in sending special or important matter for certain issue. Twenty-five "extras" without change in form will be given free when they are wanted, and this should be so stated on the MS. along with the number desired. The receipt of all papers will be acknowledged.—ED.

PICTURES for the album of the American Entomological Society: E. T. Cresson, Philadelphia; L'abbe V. A. Huard, Chicoutimi, P. Q. Can.; H. A. Morgan, Baton Rouge, La.; E. A. Smyth, Jr., Blacksburg, Va.; Trevor Kincaid, Seattle, Wash.; F. D. Twogood, Riverside, Cal.

"I am very much pleased to notice the growth of your journal (ENTOMOLOGICAL NEWS), as it certainly deserves to grow and flourish; it is the cheapest and best entomological paper published, European journals not excepted. Wishing you further success, I am,

"H. A., Elberfield, Germany."

AT a meeting of the Ohio State Horticultural Society, February 20th, the secretary was unanimously instructed to correspond with the societies of other States with reference to sending delegates to a national convention to discuss the best means for preventing the introduction and diffusion of insect and fungus pests, and measures for destroying both these and such as are indigenous to the country.

A young man and his friend of Utoptera,
Went one day to catch Lepidoptera.
He saw one sail by,
Jumped for it too high,
And landed amidst Hymenoptera.

He used words that are found in Theology,
And then to his friend made apology.
I am sorry to say
I must bid you good day,
For I've had quite enough Entomology.—(*Anonymous*)

SNAKE BITES.—In reply to Mr. G. R. Pilate's inquiry for a sure remedy for snake bites I beg to state that a man who makes a business of collecting rattle snakes for the Chinese doctors, says that the *gall* of a rattle snake is a *sure* cure for their "bites." He has been bitten a half dozen times and the gall from a rattler has never failed to work a complete cure, except once, when he could not get at all the punctures, when medical aid had to be summoned. He says that after applying the gall there is no more pain than from a bee sting.—BURTON L. CUNNINGHAM, Fort Klamath, Oregon.

DOBELL, in his travels in Kamtschatka, relates when the Chinese wish to enjoy a cricket fight they place two males in an earthen bowl six or eight inches in diameter. The owner of each tickles his prize-fighter with a feather, which makes them run around the bowl in different directions; they frequently meet and jostle each other as they pass. After several such meetings they at last lose their temper, and ere long, becoming greatly exasperated, they fight with such fury that both are literally torn limb from limb.

WHOLESALE MASSACRE.—The French war office has recently been occupied with a large number of inventions for the wholesale massacre of the enemy in the next great war. One of the inventors proposes that the Minister of War should subjugate and train squadrons of horse flies. These novel warriors, it is suggested, would be fed on blood smeared beneath a thin skin covering on dummy figures dressed as soldiers of the

Triple Alliance. When diplomatic relations were near a breaking point the flies would have the juice of certain poisonous plants added to their daily food, and when war should be declared the French army would merely have to send them as an advance guard in the path of the enemy. —*Newspaper.*

THE TRANSACTIONS of the American Entomological Society for January-March, 1896 (vol. xxxiii, No. 1), soon to issue, will contain the following papers: The Taxonomic Value of the Antennæ of Lepidoptera, by Donaldson Bodine; New North American Spiders and Mites, by Nathan Banks; Supplement to the Crabroninæ of Boreal America, by Wm. J. Fox; The Dipterous genera *Tachytrechus* and *Macellocerus* by J. M. Aldrich; A monograph of the genus *Synergus* Hartig, by C. P. Gillette.

LIMENITIS ARTHEMIS.—This species was seen here this season for the first time. On June 30th a ♀ *arthemis* and ♂ *ursula* were taken sitting together on leaf of shrub by the wayside—no hill of any size within four miles. On July 23d another specimen, much worn, was seen near the same spot. On July 26 and 27th a number of specimens were seen, much worn and evidently the last of the brood, in the hill country about Cummington, twenty-five miles northwest of here.

Strangalia bicolor was also taken this season for the first time; it easily escapes the notice of the coleopterist on account of its extreme shyness and resemblance to a Hymenopter in flight.

Saperda obliqua is generally found near the tip of an alder branch, but easily escapes notice on account of its great resemblance to a withered leaflet. It also differs from the other members of its genus, which are shy insects, in that it sits perfectly motionless with antennæ extended forward and clinging tightly to the branch when seized. I have also found it on birch.

Purpuricenus humeralis I had heretofore only taken on willow, but this season I took a number of specimens at different times from a wounded branch of scrub oak; one specimen was taken on flowers and one on a cluster of black raspberries; the writer could not help being struck by the similarity of the colors of the beetle with those of the ripe and ripening berries.

Myodites stylopides. This curious beetle had only been found by the writer on two occasions on wild flowers until two years ago. It was then found in some numbers on the flowers of thoroughwort in a ravine at Montgomery, Mass. This season the locality was visited again on July 20th, and although the plant was not yet in blossom, several specimens were taken on the flower buds.

Is not *Chlænius prasinus* a Southern species? I took it this season at electric light.—FRED. KNAB, Chicopee, Mass.

Identification of Insects (Imagos) for Subscribers.

Specimens will be named under the following conditions: 1st, The number of species to be **limited to twenty-five** for each sending; 2d, The sender to pay all expenses of transportation and the insects to become the property of the American Entomological Society; 3d, Each specimen must have a number attached so that the identification may be announced accordingly. Exotic species named only by special arrangement with the Editor, who should be consulted before specimens are sent. Send a 2 cent stamp with all insects for return of names. Before sending insects for identificatcn, read page 41, Vol. III. Address all packages to ENTOMOLOGICAL NEWS, Academy Natural Sciences, Logan Square, Philadelphia, Pa.

Entomological Literature.

Under the above head it is intended to note such papers received at the Academy of Natural Sciences of Philadelphia pertaining to the Entomology of the Americas (North and South). Articles irrelevant to American entomology, unless monographs, or containing descriptions of new genera, will not be noted. Contributions to the anatomy of insects, however, whether relating to American or exotic species will be recorded.

1. TRANSACTIONS OF THE ROYAL SOCIETY OF SOUTH AUSTRALIA, xix, pt. 2.—Notes on Victorian and other Blattariæ and descriptions of new species, J. G. O. Tepper. Descriptions of new genera and species of Australian Coleoptera, T. Blackburn.

2. MITTHEILUNGEN AUS DEM ROEMER-MUSEUM, Hildesheim, No. 3.—The Apatelidæ, A. R. Grote.

3. TRANSACTIONS OF THE AMERICAN MICROSCOPICAL SOCIETY, xvii.—Some peculiarities of the mouth-parts and ovipositor of *Cicada septendecem*, J. D. Hyatt.

4. ARCHIVES DE BIOLOGIE, xiv, fasc. 2.—Physiological studies on the Orthoptera, L. Cuénot.

5. MEMOIRES DE L'ACADEMIE ROYALE DES SCIENCES, etc., de Danemark (D. Kgl. Danske Videnskabernes Selskab Skrifter), viii, No. 1.—The lateral organs of the larvæ of the Scarabæidæ, F. Meinert.

6. TRANSACTIONS OF THE ENTOMOLOGICAL SOCIETY OF LONDON, 1895, pt. 5.—President's address: The Speculative Method in Entomology, R. Meldola.

7. THE INTERNATIONAL JOURNAL OF MICROSCOPY AND NATURAL SCIENCE, pt. 29.—Predaceous and parasitic enemies of Aphides (including a study of hyper-parasites), pt. 3, H. C. A. Vine. The origin of insect transformations, G. H. Bryan.

8. JOURNAL OF THE TRINIDAD FIELD NATURALISTS' CLUB, ii, No. 11.—Description of a new genus and species of Proctotrypid bred by Mr. F. W. Urich from an Embiid, W. H. Ashmead. The cattle fly (*Compsomyia macellaria*), C. W. Meaden.

9. THE ENTOMOLOGIST, London, No. 393.—Descriptions of previously undescribed species of Dimorphina in the Natural History Museum, A. G. Butler. New experiments on the seasonal dimorphism of Lepidoptera, A. Weismann (from the German by W. E. Nicholson). Senses of insects, G. A. K. Marshall. A new scale-insect infesting date-palms, T. D. A. Cockerell.

10. THE KANSAS UNIVERSITY QUARTERLY, iv, No. 3.—Bibliography of North American Dipterology, 1878–1895, S. W. Williston. Fissicorn Tachinidæ, ibid. List of Asilidæ, supplementary to Osten Sacken's Catalogue of North American Diptera, 1878–1895, W. A. Snow.

11. PROCEEDINGS OF THE DAVENPORT ACADEMY OF NATURAL SCIENCES, vi, [Extract].—A list of Coleoptera from the southern shore of Lake Superior, with remarks on geographical distribution, H. F. Wickham.

12. ANNALS AND MAGAZINE OF NATURAL HISTORY, February, 1896.—New genera and species of Pyralidæ, Thyrididæ and Epiplemiidæ (cont.), W. Warren. *Atta* (*Œcodoma*) *cephalotes* Latr., "The Soldier." J. H. Hart. On the presence of Wood-Mason's stridulating-organ in *Trechona zebrata*, R. I. Pocock.

13. THE BOTANICAL GAZETTE, February, 1896.—Flowers and insects, C. Robertson.

14. PSYCHE, a journal of entomology, March, 1896.—The hibernation of Aphides, C. M. Weed. Oviposition and hatching of *Thanaos juvenalis*, J. W. Folsom. Preliminary diagnoses of new Coccidæ (cont.), T. D. A. Cockerell. Some species of *Oxybelus* found in New Mexico, T. D. A. Cockerell and C. F. Baker. New Homoptera received from the New Mexico Agricultural Experiment Station, ii, C. F. Baker.

15. ARCHIVES DE ZOOLOGIE EXPERIMENTALE ET GENERALE (3), iii, No. 4.—Study of the lymphatic glands of some Hemiptera, A. Kawalevsky.

16. LE NATURALISTE CANADIEN, January, 1896.—The last descriptions of l'Abbe Provancher (continued in February number).

17. THE AMERICAN NATURALIST, March, 1896.—On certain Geophilidæ described by Meinert, F. Cook.

18. THE CANADIAN ENTOMOLOGIST, March, 1896.—*Ceutorhynchus napi* or *Ceutorhynchus rapæ*, F. M. Webster. Remarkable work of insects, W. Trealease. A few new spiders, N. Banks. A reply concerning *Noctua* and *Agrotis*, A. R. Grote. The Coleoptera of Canada, xv, H. F. Wickham. Canadian Hymenoptera (No. 7), W. H. Harrington. On the structural affinities of the genus *Demas*, J. W. Tutt. A new Coccid from Texas, T. D. A. Cockerell. Photographs without shadows, W. E. Rumsey. A new *Typhlopsylla* from Mexico, C. F. Baker.

19. UNIVERSITY OF MINNESOTA AGRICULTURAL EXPERIMENT STATION (Division of Entomology), Bulletin No. 43.—Insects injurious in 1895, Otto Lugger.

20. THE ENTOMOLOGIST'S RECORD, etc., March, 1896.—The resting habit of insects as exhibited in the phenomena of hibernation and æstivism, W. S. Riding. The type of *Angronoma*, A. R. Grote.

21. THE ENTOMOLOGIST'S MONTHLY MAGAZINE, March, 1896.—An experiment bearing on the number of larval instars, and the distinctness of larval and pupal instars in Lepidoptera, T. A. Chapman.

22. BULLETIN DE LA ACADEMIE ROYALE DE BELGIQUE, XXX, No. 11.—How flowers attract insects, F. Plateau.

23. CATALOGUS HYMENOPTERORUM, . . . vol. x, C. G. de Dalla Torre, Leipzig, 1896.—This part deals with the bees united under the head Apidæ. Workers will probably be surprised to see *Andrena* changed to *Anthrena; Nomia* and *Eunomia* united as one genus; and the synonymizing of *Diadasia*, *Emphor*, *Melissodes*, *Synhalonia*, *Tetralonia* and *Xenoglossa* with *Eucera*. *Podalirius* is to replace *Anthophora*, *Entechnia*, *Clisodon* and *Habropoda*, the three latter, however, being regarded as subgenera. *Bombomelecta* is regarded as a synonym of *Melecta*. *Heriades* is spelled *Eriades*, and includes *Chelostoma*. Too much faith cannot be placed in the localities given for some of the species inasmuch as *Epeolus rufoclypeus*, said to come from Cuba, and *Megachile martindalei*, *multidens* and *pedalis*, said to come from Indiana, were all described from Jamaica, West Indies! *Ammobates* is to replace *Phileremus*, the latter being a synonym of the former. While much of this uniting of genera is no doubt justified, yet we venture to predict that many of the so-called synonyms will yet stand as distinct genera. The work is quite voluminous, including 643 pages, and brings the list of species and bibliography down to the end of 1893.—F.

INDEX TO THE PRECEDING LITERATURE.

The number after each author's name in this index refers to the journal, as numbered in the preceding literature, in which that author's paper is published; * denotes that the paper in question contains descriptions of new North American forms.

THE GENERAL SUBJECT.

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MYRIAPODA.

Cook 17.

ARACHNIDA.

Pocock 12, Banks 18*.

ORTHOPTERA.

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HEMIPTERA.

Hyatt 3, Cockerell 9*, 14, 18*, Weed 14, Baker 14*, Kowalevsky 15.

COLEOPTERA.

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DIPTERA.

Meaden 8, Williston 9 (two), Snow 9.

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Grote 2, 18, 20, Butler 9, Wasmann 9, Warren 12, Folsom 14, Trealease 18, Tutt 18, Chapman 21.

HYMENOPTERA.

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ECONOMIC ENTOMOLOGY.

Lugger 19.

Doings of Societies.

PHILADELPHIA, March 10, 1896.

A stated meeting of the Feldman Collecting Social was held at the residence of Mr. H. W. Wenzel, 1509 S. 13th Street. Members present: Messrs. Bland, H. W. Wenzel, Johnson, Boerner, Seiss, Castle, E. Wenzel, Laurent, Hoyer, Fox and Schmitz. Honorary members: Dr. Geo. H. Horn and Prof. John B. Smith. Meeting called to order at 9 P. M., President Bland presiding. Under written communications Mr. Fox read a paper giving the history of the founding of the Social which he had prepared for publication in the NEWS.

Dr. Horn spoke on some studies in *Ludius* made at the request of Mr. Champion, who is engaged on writing up a history of Elateridæ, which showed that our Northern species are distinct from those of Mexico. *L. hepaticus* and *texanus* have the prosternum oblique, and when seen in profile, uninterrupted; there is a species from Lower California and Arizona closely resembling *texanus*, which has an emargination when seen in profile. Dr. Horn continued with remarks on some of the difficulties encoun-

tered in a study of Oedemeridæ, and showed that while a character may be admissable for the separation of genera, it would be found in a nearby genus that species must be admitted with and without the same character. It was indicated that *Calopus* and *Oxacis* must be each separated in two genera.

Relative to a discussion on the question of the possibility of evolution in some orders of insects, Prof. Smith remarked that even the classification of the orders themselves and their mode of evolution or descent was not yet satisfactorily settled. As a result of his studies he believed that a branching of the insects took place in the Thysanura, and that from them were developed on one side the Hemiptera, and on the other side all other orders; that is to say, that the one order, Hemiptera represented a branch of equal value, though not equal in development to all other orders. The Hemiptera type proved well adapted to sustain itself, but had little power of variation, thence there is a remarkable similarity in certain structural characters throughout the order. The mandibulate type proved to possess unlimited powers of variability and branched in every direction. The best comparison to make would be a tree branching from the seed, of which one shoot extended upward without branches and with only a few short spurs or twigs and a crown of leaves at the tip, while a second trunk branched soon after reaching above ground and sent off vigorous shoots from all the branches in every direction, making a symmetrical tree at the side of the flag staff.

Apropos of Dr. Skinner's remarks at the January meeting in reference to arrangement of the females in the cabinets, Mr. Laurent remarked that he thought it made but little difference how the specimens were arranged, that personally he preferred to arrange the larger species one above the other, and to indicate in his check-list by the use of the characters, denoting male and female, as to what sex or sexes were represented in his collection, by which means he has but to look over his list when he can easily ascertain what species or sex he is short of by simply noting those which are unmarked.

Dr. Horn stated that he thought every collector should arrange his specimens to suit his own fancy or convenience and purposes of study.

Mr. Fox moved that a vote of thanks be extended to Dr.

Skinner for entertaining the Social so pleasantly at the last meeting.

No further business being presented the meeting adjourned to the annex at 10.30.

THEO. H. SCHMITZ, *Secretary.*

ENTOMOLOGICAL SECTION OF THE CHICAGO ACADEMY OF SCIENCES.—The regular meeting was held in the Matthew Laflin Memorial Building, Lincoln Park, Friday, March 20, at 8 o'clock P. M. The genus *Phyciodes* was studied, and members were requested to bring species of that genus for comparison.

ARTHUR J. SNYDER, *Recorder.*

American Entomological Society.

PROCEEDINGS OF MEETINGS.

DECEMBER 9, 1895.

The regular annual meeting was held this evening at the Hall S. W. cor. 19th and Race Streets. Meeting called to order at 8.20 P. M.. President, Dr. Geo. H. Horn in the chair. Members present: Dr. Horn, E. T. Cresson, Welles, Skinner, Liebeck, Johnson, Seiss, Heilprin, G. B. Cresson, Fox, Ridings. Visitors: Reinick, Castle, Luccareni. This being a business meeting such details are herein omitted. Mr. Haimbach and Dr. H. G. Griffith were duly elected members. At the annual election the following were elected to office and committees:

President—GEO. H. HORN, M.D.
Vice-President—PHILIP P. CALVERT.
Treasurer—E. T. CRESSON.
Recording Secretary—J. H. RIDINGS.
Corresponding Secretary—WM. J. FOX.
Librarian—GEO. B. CRESSON.
Curator—HENRY SKINNER, M.D.

Executive Committee: PHILIP LAURENT, CHARLES LIEBECK, C. FEW SEISS.

Publication Committee: E. T. CRESSON, C. A. BLAKE, B. H. SMITH.

Finance Committee: J. W. MCALLISTER, C. S. WELLES, CHAS. C. CRESSON.

J. H. RIDINGS, *Rec. Sec'y.*

FEBRUARY 27, 1896.

Meeting held this evening at 8 P. M., in the new quarters at The Academy of Natural Sciences, President Horn in the chair. Members present: Dr. Horn, E. T. Cresson, Liebeck, Dr. Skinner, Laurent, G. B. Cresson, Seiss, Welles, Johnson, Fox, Ridings, Dr. Griffith. Visitors: Dr. Castle, Prof. Holt, Reinick, Luccareni, Kemp, Westcott, Mr. Lancaster Thomas and Mrs. C. B. Aaron. Dr. Skinner, Curator, reported that almost all the property of the Society had been removed from the rooms in the lower hall formerly occupied. The amount of space now secured, and the distribution of material, show how very inadequate were our former quarters. The Publication Committee reported in favor of the publication of a paper by Dr. J. L. Hancock, on the Illinois grouse locusts. Dr. Skinner spoke in regard to the proper labeling of specimens. He stated that fully seventy-five per cent. of the insects in the collection of the Society were without locality labels to show where the insects had been taken. It was claimed that such labels were a necessary adjunct to the proper study of collections by those interested, and they should be placed on the *pins* of all specimens. The speaker asked the President his opinion of political boundaries in the make up of scientific collections, and especially in reference to Lower California. The President replied, explaining why Lower California had been included in the fauna of this country. How Dr. LeConte in his descriptions of insects from that locality had been led to include them with our own, and gave instances of the usefulness of so doing. He further stated that a smaller percentage of tropical insects are found there than in Texas. Dr. Skinner exhibited a book presented to the Society in 1877 by Mrs. Lucy Say. It represented local Lepidoptera prepared by gumming them on to paper and then peeling off the membrane leaving the scales. This, when neatly done, looks like a perfect colored drawing of the insect. Two bound volumes of papers by Dr. John Hamilton were presented by the author. The thanks of the Society were voted to the kind donor. The President announced the death of Mr. T. B. Ashton, of Tonganoxie, Kans., one of the early members of the Society, and spoke of the interest shown by the deceased in its welfare in its younger days.

J. H. RIDINGS, *Rec. Sec'y.*

The following papers were read and accepted by the Committee for publication in ENTOMOLOGICAL NEWS:

THE GENUS OCHTHERA.

By WILLIAM MORTON WHEELER, Ph.D.
(University of Chicago.)

The genus *Ochthera* is noteworthy in several particulars. It is the most striking, and, probably for that reason, the oldest genus in the family Ephydridæ, having been founded by Latreille as early as 1804. The most conspicuous character of the flies of this genus is the peculiar development of the fore legs, which have taken on a raptorial function. The fore coxa is greatly lengthened and thickened and very mobile, the femur enormously enlarged, and the tibia, which is curved and provided with a strong spine at its tip, may be closed up tightly against the bulging face of the femur. This is essentially the same structural modification which is met with in the fore legs of the Mantidæ (Orthoptera), Mantispidæ (Neuroptera), Nepidæ, Belostomidæ, Naucoridæ (Hemiptera) and in the second maxillipeds of the stomatopod *Squilla* among the Crustacea. Undoubtedly these are true cases of parallelism, the legs having assumed the same raptorial form under the stress of similar conditions, but independently in the different orders.

The genus *Ochthera* is poorly represented in Europe (two species) as compared with North America. Besides *O. mantis* Degeer, which is common to both continents, Loew described (Monog. I, pp. 159–162) three species from this country. Prof. Williston has discovered another species from St. Vincent, W. I.* A description is here given of a sixth species with notes on some of the known forms:

Ochthera lauta n. sp. ♀.—Length 3.7 mm.; length of wings 3.5 mm. Antennæ of the usual form, black; clypeus very small; face very narrow, silvery-white, with scarcely a tinge of yellow; in the middle just below the antennæ a shining black, rather low and rounded protuberance, from which a median black groove extends nearly to the clypeus. On either side of this median groove there is a somewhat broader and curved lateral groove, and another of a similar trend running close to the orbit. On either side a series of eight linear black depressions radiates mesially

* Prof. Williston has generously loaned me his type specimens of this species. I am also indebted to Mr. W. A. Snow for several specimens of *O. mantis* from different localities.

from the orbital groove. Front and occiput shining metallic blue, the former with a small velvety black spot on either side near the upper orbit. Cheeks, thorax and posterior pleuræ metallic silvery, not very shining; anterior pleuræ shining black, with a steel-blue reflection. The dorsal surface of the thorax with three longitudinal ferruginous vittæ of about equal length, but not reaching to the metallic silvery scutellum. Ground color of the abdomen shining coppery, somewhat dimmed by a layer of whitish dust. Fore coxæ blue-black on the outer faces, with a thick patch of golden yellow dust at their bases; femora and tibiæ of all the legs dark steel-blue dusted with white; hind tibiæ decidedly arcuate. Inner surfaces of the raptorial fore legs shining black with little dust; tarsi red, except the last joint, which is black, and the considerably swollen first joint of the hind tarsi, which is concolorous with the femora and tibiæ. Wings hyaline, with light yellow veins, only the costal vein darker where it rounds the tip of the wing; halteres pale yellow.

One specimen taken in sweepings near Milwaukee, Wis., June 23, 1895.

This species is readily distinguished from other described forms by the conspicuous, ferruginous bands on the thorax, and by the peculiar facial markings, although in the latter character it resembles *O. exculpta* Loew from Cuba. The radiating orbital grooves, however, are replaced by "impressed, rather coarse dots" in the Cuban species, which, besides a marked difference in the color of the front and legs, has the first joint of the hind tarsi "very little swollen."

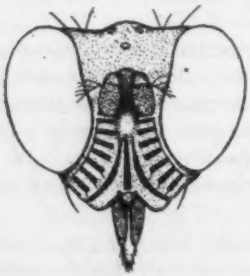

Fig. 1.—Face of *Ochthera lauta* n. sp.

Fig. 2.—Hind leg of *Ochthera lauta* n. sp.

Ochthera mantis Degeer.

This species is widely distributed over the United States. Specimens from the following localities have come under my notice: Connecticut (S. W. Williston), Wisconsin, Illinois and Nebraska (W. M. Wheeler), Lusk, Wyoming (W. A. Snow and W. M. Wheeler); Little Wind River, Wyoming (W. M. Wheeler); Douglas County, Kansas (University of Kansas coll.); California (Baron). Although the color of the face varies in the different specimens—a fact which Loew also observed—they all belong to one species. In some individuals the three ferruginous bands of *O. lauta* are represented by faint, opaque, brown stripes. *O. mantis* is the largest of our species, many specimens measuring 5 mm.

O. cuprilineata Williston.—The three thoracic bands are metallic-violet bordered with cupreous; the middle of the face has a rather low and somewhat wrinkled metallic-green protuberance with a depression in its middle, but otherwise the face is smooth and yellow, resembling the face of the preceding species.

O. tuberculata Loew.—One specimen from Milwaukee, Wis., agrees well with Loew's description. The polished steel blue outer surface of the upper half of the middle tibia is a character which I do not find in my specimens of *O. mantis*. The first joint of the hind tarsi is considerably swollen, like that of *O. lauta*.

The North American species of *Ochthera* may be tabulated as follows:

1. Thorax with ferruginous or metallic vittæ . . . . . 2.
   Thorax without, or with very indistinct vittæ . . . . . 3.
2. Face with impressed black lines radiating from an orbital groove. **lauta** n. sp.
   Face without such impressed lines . . . **cuprilineata** Williston.
3. Face with black furrows and dots . . . . . **exculpta** Loew.
   Face without black furrows and dots . . . . . 4.
4. First joint of hind tarsi but little swollen . . . **mantis** Degeer.
   First joint of hind tarsi considerably swollen . . . . . 5.
5. Face broad, tarsi black . . . . . **rapax** Loew.
   Face narrow, tarsi red . . . . . **tuberculata** Loew.

A COMPARISON OF THE NORTH AMERICAN SPECIES OF ARACHNIS, WITH DESCRIPTION OF A NEW SPECIES.

By Dr. RODRIGUES OTTOLENGUI.

(See Plate IV.)

In ENTOMOLOGICAL NEWS, vol. iv, p. 140, is a description of a new *Arachnis* by Messrs. Neumoegen and Dyar. At this place it is called a new variety of *Arachnis picta*, and the name *citra* is given. In "The Revision of the Bombyces" *citra* is called a lacal race of *picta*.

From material before me I believe that I can establish the fact that *citra* is not a variety of the Californian *picta*, but is much more closely allied to another species, which I have decided to call *Arachnis maia*.

In this connection I may make a statement of some interest. I believe that *citra* is a distinct species, as is also *maia*, its nearest ally. Nevertheless I have specimens of *picta*, reared from a single brood of larvæ, among which is one in which the creamy ground color gives place to yellow, and this difference in color is one of the prime distinctions between *citra* and *maia*, so that it may be proven by future discoveries that one of these forms is either a variety or a local race of the other. With this possibility in mind I may quote from the original description of *citra* the following paragraph: "Mr. Bruce, who caught these charming insects and who suggested the varietal name, writes as follows: 'This form (*citra*) is found nearly on the western border of Colorado, at low elevation (6000 feet), and is very constant in color. I have them even a little pinker, and not quite so yellow. The ordinary form is not found at that place at all, yet is common 120 miles east of there, and I have reared a good many from females taken in Arkansas Valley, all being the ordinary form. It (*citra*) is so local and constant in color it is surely worthy of a name.'"

By "ordinary form" in the above paragraph Mr. Bruce meant *picta*, but it happens that the true *picta* does not occur in Colorado at all, and what he mistook for *picta* is what I am about to describe as *maia*.

Should it be learned hereafter that *citra* and *maia* are but varieties, one of the other, I understand that, according to the rules, the specific name would ordinarily be *citra*, and the varietal name

maia. But it seems to me that this would be a foolish adherence to rule, because, in the first place, we have *aulea* and *picta*, both gray forms, in the latter of which, at least, we have an occasional tendency towards yellow.

But more especially because of the following: *citra* was described from the Neumoegen collection, and was called a variety of *picta*, *after comparison with the specimens in the Neumoegen collection labeled picta*. Now I find that these specimens, *supposed to be the Californian picta, are really the Colorado maia*. Thus it would seem but proper to correct this error at the start, and if one be the variety of the other, the gray form should be the ground form, as it is throughout the genus.

After close study of the material at hand, which embraces three pairs of each—*citra*, *maia* and *picta*, I am convinced that we have to do with three distinct species, and I will first describe the new species *maia*, and then point out differential characteristics:

Arachnis maia nov. spec. *Male*.—Head gray between the eyes, white above, a black line between. Palpi vermilion, with a few whitish scales. Prothorax white, each half having a gray spot heavily outlined with black; patagiæ gray, outlined with black, white showing along outer margin. Thorax gray, bordered with black, and a double median black line, separating posteriorly, showing white between (the ground color of this genus is white, but the gray pattern is so heavy that it will be easier to describe it reversely). Primaries: upper side gray; all veins white, faintly outlined with black and terminating at the margin in a minute triangle of white, the base at the margin. The whole surface of the wing is reticulated with white spots, dashes and bars, there being three more or less continuous bands outwardly. All these white markings are heavily bordered with black, the submarginal band being solidly black in places. The marginal band is sharply dentate, one tooth extending between each vein and reaching nearly to the outer margin. Reverse: the under side is slate color, crossed by bands which practically agree with the upper side. The marginal band is white, and the submarginal band is white near the costa; otherwise the bands are orange, but there is a tendency in this species towards vermilion, replacing the orange except at the costa, where the orange persists. In one male before me (Las Vegas) there is no vermilion, while in another (Colorado) the vermilion has replaced the orange, except the narrowest streak along the costa. Secondaries: upper side pale vermilion, the middle third hyaline; along the costal margin three large gray spots margined with black, the spaces between being orange. The outer margin is a narrow black band occasionally broken up into spots, nearly or quite disappearing, two spots (the outer being the larger)

at the termination of the submedian veins being apparently constant. Reverse: the under side is the same, except that between the costal spots the color is white instead of orange. Abdomen vermilion above, with a narrow dorsal median band of black, of uniform width; below white; laterally a narrow band consisting of gray spots margined with black.

Female.—Head, thorax and primaries same as male, the replacing of the orange with vermilion on the under side of primaries, except along the costa, being more marked than in the male. The secondaries are vermilion, bordered at the outer margin by narrow band of gray, which is broken, so that a spot shows at the termination of the second submedian vein. The wing is crossed by three irregular gray bands, of which the outer is the widest, the three becoming confluent near the anal angle. These bands are bordered with black; the basal area is vermilion. On the under side the secondaries show similar markings, the vermilion giving place to white in places, and to orange along the costa, more especially near the base; otherwise the basal area is vermilion. The abdomen is vermilion above and white below. On the dorsal aspect of each segment is a gray spot, margined with black, together forming a median band in width equaling one-third of that of the abdomen; laterally a row of minute gray spots. On the last segment the dorsal and ventral surfaces are divided by an orange spot. On the ventral surface two sublateral and one median row of three gray spots, the former small, and the latter united into a triangular spot of considerable size. Expanse: ♂ 45 mm.; ♀ from 55–60 mm.

Types: male from Mexico, and female from Colorado, in collection of the author. Male coll. Mr. Doll, and female in coll. Mr. Dyar, both from Colorado. With the exception of the Las Vegas specimen these insects were captured by Mr. Bruce.

In the plate which accompanies this article the upper figures are male and female of ***aulea***, the second pair are typical ***picta***, the third ***maia*** and the last ***citra***.

The following is a comparison of the species showing the chief marks of distinction:

COLORATION.

Aulea.—Primaries, upper side, dark slate and creamy-white. Secondaries crimson and blackish; under side crimson and blackish, with white along the costa of secondaries in females.

Picta.—Primaries, upper side, pale slate and creamy-white. Secondaries pale slate and carmine; under side pale slate and orange, the latter replaced with carmine on lower half of secondaries.

Maia.—Primaries gray and white, latter outlined heavily with black. Secondaries vermilion and gray, hyaline in males; under side gray, vermilion, white and orange, the colors predominating in the order named.

Citra.—Primaries light gray and lemon-yellow, with black outlines. Secondaries vermilion and gray; under side: primaries yellow and gray, with white outer band; secondaries: costal third yellow, rest vermilion, bands gray. Males, secondaries subhyaline.

BANDS.

Aulea.—Primaries: bands distinct near costa, fading away below; marginal band faint. Secondaries: blackish bands very wide; bands one and two confluent, except at costa.

Picta.—Primaries: bands more distinct; marginal band slightly dentate at apex and disconnected at vein six; band two the widest, crossing the wing uninterruptedly and forming somewhat the figure of an interrogation mark (?). Secondaries: inner band continuous, median and outer bands disconnected, but confluent near anal angle; in the female the inner band is widest, and all three are confluent at anal angle.

Maia.—Marginal band the most conspicuous, dentate throughout and connected at vein six; band two often disconnected and constantly narrowed by a heavy, triangular, black spot at the bifurcation of the median vein. Secondaries of male hyaline, of female crossed by three continuous gray bands, of which the outer is the widest; the three bands united near anal angle.

Citra.—Primaries: all the bands continuous across the wing; marginal band the most conspicuous in the male, and marginal and band two equally so in the female; marginal band dentate; band two as in *picta*, but showing the triangulate black spot of *maia*. Secondaries of male subhyaline, of female crossed by three bands; the inner band is continuous, the median band is sometimes continuous and occasionally broken into two parts; the outer band is divided into three.

BASAL SPACE.

Aulea.—Base of secondaries blackish; inner margin blackish.
Picta.—Base of secondaries carmine and pale slate; inner margin slate.
Maia.—Base of secondaries vermilion; inner margin vermilion.
Citra.—Base of secondaries vermilion; inner margin vermilion.

ABDOMEN.

Aulea.—Dorsal surface solidly dark slate; ventral white, with sublateral and median gray bands.

Picta.—Dorsal surface: male carmine, with wide, median, gray band; female: each segment chiefly slate, carmine showing like stripes between the segments; ventral surface white, with three median and three sublateral small spots, all about equal; the lateral spots are large.

Maia.—Dorsal surface vermilion, with narrow median band in male; the female has a wider median band, minute lateral and small sublateral spots; the ventral aspect is white, with three confluent gray spots making a large triangular blotch.

Citra.—Dorsal surface is vermilion in the male; in the female it is vermilion with a narrow median band of gray, increasing in width as it extends posteriorly, and is widest on the hindmost segment; the lateral and sublateral spots are small, the median spots on the ventral side being larger, but disconnected.

EXPANSE.

Aulea: male, 45 mm.; female, 60 mm.
Picta: male, 40 mm.; female, 50 mm.
Maia: male, 45 mm.; female, 60 mm.
Citra: male, 50 mm.; female, 70 mm.

OBITUARY.

Dr. JUAN GUNDLACH, the well-known German naturalist, in Cuba passed away at the age of 85 years. Dr. Gundlach was a German, but had been 58 years in the island, which were unceasingly devoted to his studies of nature in mountains and swamps, up to seven years ago, when failing strength limited his activities. Some time ago he made a gift of a valuable collection of vegetable, animal and mineral specimens to the Institute. He had received an offer of $15,000 for this collection. The remains lay in state in Science Hall, and were buried this afternoon, March 16.

J. VON BERGENSTAMM, of Vienna, the entomologist, is dead.

ENTOMOLOGICAL NEWS for March, was mailed February 29, 1896.